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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,303

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EXAMINER

SWANSON, WALTER H

ART UNIT

PAPER NUMBER

2823

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,303	Applicant(s) VAN MOL ET AL.	
	Examiner WALTER H. SWANSON	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>18 September 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Acknowledgment is made of applicants' claim for foreign priority based on an application filed at the European Patent Office on 16 March 2004. It is noted that applicants have filed a certified copy of said application as required by U.S.C 119, which papers have been placed of record in the file.

Oath/Declaration

Acknowledgment is made of applicants' declaration filed on 19 March 2007.

Information Disclosure Statement

The information disclosure statement filed on 18 September 2006 complies with 37 CFR 1.98(a)(2).

Preliminary Amendment

The preliminary amendment filed on 18 September 2006 complies with 37 CFR 1.98(a)(2).

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because of the following reason:

Figure 1: Oxide is improperly noted as Oxyde.

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be

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labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicants will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Applicants are advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

It is suggested that the applicant add and [delete] the following:

ABSTRACT: “... at a temperature of at least 250° C, and”

Claims 5 (3x) and 8 (2x): [Vapour] → Vapor

Claims 15 and 16: [aluminium] → aluminum

Appropriate correction is required.

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicants’ cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicants are advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

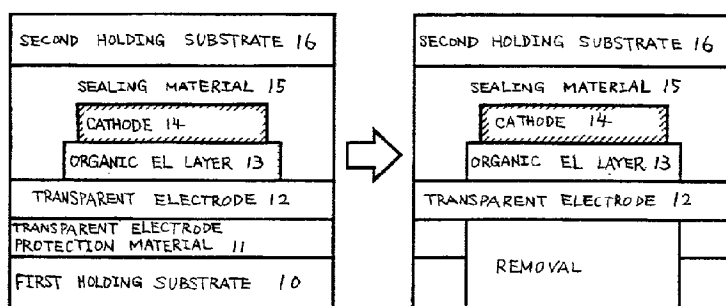
Claims 1-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsui *et al.* (US 2002/0030770 A1; hereinafter, “**Tsutsui**”).

Regarding claim 1:

Tsutsui discloses a method for preparing a flexible organic electronic device comprising at least a first electrode (12) comprising a transparent conductive oxide layer (ITO col. 2, [0029]), an organic active layer (13), a second electrode (14) and a polymeric substrate layer (16; col. 2, [0034]), whereby the transparent conductive layer (12) is applied on a removable substrate layer (10) or one or more transparent layers previously applied onto the removable substrate layer (10) at a temperature of at least 250°C, and the removable substrate layer (10) is removed when the polymeric substrate layer (16) has been applied (FIG. 1).

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FIG. 1



Tsutsui discloses applying the transparent conductive layer by a high-temperature sputter deposition process. Tsutsui discloses the claimed invention except for applying a transparent conductive layer at a temperature of at least 250°C. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply a transparent conductive layer at a temperature of at least 250°C, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Regarding claim 2:

Tsutsui discloses a method according to claim 1 comprising the steps of:

- a) applying the first electrode (12), which comprises a transparent conductive oxide layer (ITO) onto the removable substrate layer (10) or on one or more transparent layers (11) previously applied onto the removable substrate layer (10) (FIG. 1);
 - b) applying the organic active layer (13) onto the transparent conductive layer (12) (FIG. 1);
 - c) applying the second electrode (14) onto the organic active layer (13) (FIG. 1);
 - d) applying the polymeric substrate layer (16) onto the second electrode (14) (FIG. 1);
- and

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e) removing the removable substrate layer (10) (FIG. 1).

Regarding claim 3:

Tsutsui discloses a method according to claim 1 comprising the steps of:

a) applying the first electrode (12), which comprises a transparent conductive oxide layer (ITO) onto the removable substrate (10) (FIG. 1);

b) applying one or more transparent layers (13) onto the transparent conductive oxide layer (ITO) (FIG. 1);

c) applying the polymeric substrate layer (16) onto the transparent conductive layer (ITO) (FIG. 1);

d) removing the removable substrate layer (10) (FIG. 1);

e) applying the organic active layer (13) onto the transparent conductive layer (ITO) on the side from which the removable substrate layer (10) has been removed (Tsutsui is silent);

f) applying the second electrode (14) onto the organic active layer (13) (FIG. 1); and

g) applying a further polymeric substrate layer onto the second electrode (14) (FIG. 1).

Tsutsui discloses applying an organic layer (13) onto a transparent conductive layer (ITO). Tsutusi discloses the claimed invention except for applying the organic active layer on the side from which the removable substrate layer has been removed. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the organic active layer on the side from which the removable substrate layer has been removed, since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art. *In re Einstein*, 8 USPQ 67.

Regarding claim 4:

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Tsutsui discloses the claimed invention except for a transparent layer comprising SiO_2 , SiO_{2-x} , Al_2O_3 , MgO , ZnO , ZrO_2 , TiO_2 , TiN , ZnS , SiO_xC_y , Si_3N_4 and/or SiO_xN_y . It would have been obvious to one having ordinary skill in the art at the time the invention was made to form a transparent layer comprising SiO_2 , SiO_{2-x} , Al_2O_3 , MgO , ZnO , ZrO_2 , TiO_2 , TiN , ZnS , SiO_xC_y , Si_3N_4 and/or SiO_xN_y ; since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416 (CCPA 1960).

Regarding claim 5:

Tsutsui discloses a method according to any one of claims 1-4, wherein the transparent conductive oxide layer (ITO) is applied onto the removable substrate layer (10) or one or more transparent layers (11) previously applied onto the removable substrate layer (10) by means of deposition process such as Atomic Layer Deposition (ALD), sol/gel deposition, hot spraying, Atmospheric Pressure Chemical Vapour Deposition (APCVD), Low Pressure Chemical Vapour Deposition (LPCVD) or a Plasma Enhanced Chemical Vapour Deposition (PECVD) process (col. 2, [0025]; FIG. 1).

Regarding claim 6:

Tsutsui discloses applying a transparent conductive oxide layer by sputter deposition. Aside from preferred, high application-temperature ranges, Applicants have not disclosed that APCVD solves any stated problem or is for any particular purpose. Similar to APCVD, sputter deposition is performed at high temperatures and would impart certain desired properties to a transparent conductive oxide layer. Accordingly, the use of APCVD to apply a transparent

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conductive oxide layer is deemed to be a design consideration which fails to patentably distinguish over the prior art of Tsutsui.

Regarding claim 7:

Tsutsui discloses a method according to any one of claims 1-6, wherein the organic active layer (13) is applied onto the transparent conductive oxide layer (ITO) by means of a spin coating or a printing process (col. 1, [0021]; FIG. 1).

Regarding claim 8:

Tsutsui discloses a method according to any one of claims 1-7, wherein the second electrode (14) is applied onto the organic active layer (13) by means of a sputtering, plasma enhanced chemical vapour deposition (PECVD), or a low pressure vapour deposition process (cols. 1 and 2, [0021]).

Regarding claim 9:

Tsutsui discloses a method according to any one of claims 1-8, wherein the removable substrate layer (10) is removed by means of an etching process (col. 2, [0021]).

Regarding claim 10:

Tsutsui discloses the claimed invention except for applying a planomer onto the transparent conductive oxide layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply a planomer onto the transparent conductive oxide layer; since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416 (CCPA 1960).

Regarding claim 11:

Tsutsui discloses the claimed invention except for applying a transparent metal layer onto a transparent conductive oxide layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to apply a transparent metal layer onto a transparent conductive oxide layer; since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416 (CCPA 1960).

Regarding claim 12:

Tsutsui discloses applying a sealing material (15) to adhere a second holding substrate (16). Applicants have not disclosed that the lamination process solves any stated problem or is for any particular purpose. Accordingly, the lamination process used to apply a polymeric substrate is deemed to be a design consideration which fails to patentably distinguish over the prior art of Tsutsui.

Regarding claim 13:

Tsutsui discloses the claimed invention except for forming a transparent conductive oxide layer from fluorine doped tin oxide. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form a transparent conductive oxide layer from fluorine doped tin oxide; since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416 (CCPA 1960).

Regarding claim 14:

Tsutsui discloses a method according to any one of claims 1-13, wherein the polymeric substrate layer comprises polyesters, polyimids and/or polyolefins (col. 2, [0034]).

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Regarding claim 15:

Tsutsui discloses the claimed invention except for the second electrode comprising calcium, barium, lithium fluoride, and/or magnesium covered with a layer of aluminium [*sic*], silver or gold. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form an electrode comprising calcium, barium, lithium fluoride, and/or magnesium covered with a layer of aluminum, silver or gold; since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416 (CCPA 1960).

Regarding claim 16:

Tsutsui discloses a method according to any one of claims 1-15, wherein the removable substrate layer (10) comprises a foil of aluminium [*sic*] (Chart 1).

<u>Chart 1</u>		
Material		Etchant
Glass, inorganic substances	Silica glass	Hydrofluoric acid, Fluoric nitric acid
	Titanium oxide	Thermal condensed sulfuric acid; Sodium hydroxide
	Silicon	Hydrofluoric acid, Fluoric nitric acid
Metal	Aluminum	Hydrochloric acid, Rare sulfuric acid, Nitric acid
	Titanium	Hydrofluoric acid
Polymer	PMMA	Toluene, Chloroform
	Polycarbonate	Chloroform, Acetone, DMF

Regarding claim 17:

Tsutsui discloses a flexible organic electronic device obtainable by a process according to any one of claims 1-16 (col. 2, [0034]).

Regarding claim 19:

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Tsutsui discloses a device according to claim 17 or 18, wherein the device is a light emitting diode (LED) (claim 6).

Claims O-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsui in view of Yamazaki *et al.* (US 2003/0057422 A1; hereinafter, “**Yamazaki**”).

Regarding claim 18:

Tsutsui discloses depositing a sealing material above the organic active layer but is **silent** regarding transparent layers displaying water permeability of less than $0.01\text{g/m}^2/\text{day}$, and an oxygen permeability of less than $10^{-2}\text{cc/m}^2/\text{d}$.

Yamazaki **teaches** depositing multiple layers to form a barrier (1000b) capable of preventing water and oxygen from penetrating into an organic active layer (Fig. 8).

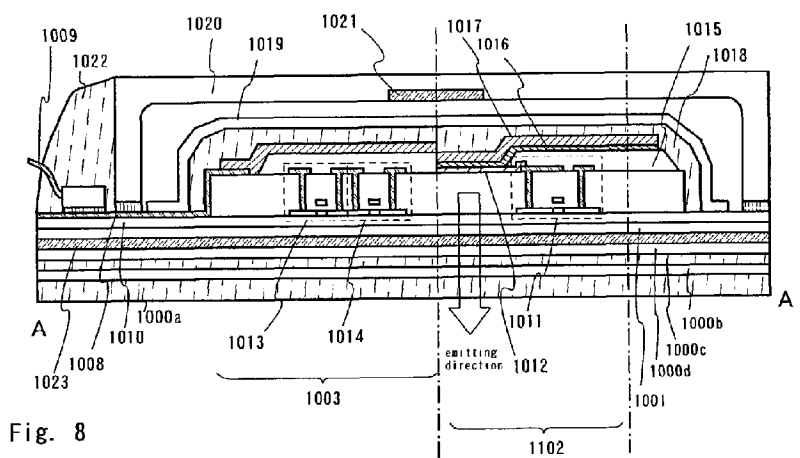


Fig. 8

Yamazaki discloses the claimed invention except for the water and oxygen permeability ranges. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form a barrier with water and oxygen permeability ranges of less than $0.01\text{g/m}^2/\text{day}$ and $10^{-2}\text{cc/m}^2/\text{d}$ respectively, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

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It would have been obvious to one of ordinary skill in the art to modify Tsutsui by forming a barrier with water and oxygen permeability ranges of less than $0.01\text{g/m}^2/\text{day}$ and $10^{-2}\text{cc/m}^2/\text{d}$ respectively as taught by Yamazaki. This is so because the modification would increase the product life of the light emitting element by suppressing diffusion of impurities such as moisture, oxygen, and alkaline metals (see Yamazaki col. 1, [0013]). Furthermore, it would have been obvious because all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. *KSR International Co. v. Teleflex Inc. (KSR)*, 550 U.S. ___, 82 USPQ2d 1385 (2007). “If a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person’s skill.” *KSR International Co. v. Teleflex Inc. (KSR)*, 550 U.S. ___, 82 USPQ2d 1385 (2007).

Claims 1-19 are rejected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter H. Swanson whose telephone number is (571) 270-3322. The examiner can normally be reached on Monday to Thursday from 8:00 to 17:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Walter H. Swanson/

4 September 2008

/W. David Coleman/

Primary Examiner, Art Unit 2823